KU RESOURCES, INC.

Prepared for:

J&L STRUCTURAL, INC.

FINAL REPORT

ENVIRONMENTAL ASSESSMENT

OF

H.H. ROBERTSON COMPANY
AMBRIDGE COATING DIVISION
AMBRIDGE, PENNSYLVANIA

KILLAM PROJECT NO. 2J131

JULY 1990

KILLAM ASSOCIATES, DLA DIVISION
100 Allegheny Drive
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PREFACE

Killam Associates, DLA Division (Killam) performed an environmental assessment of the H.H. Robertson facility in Ambridge, Pennsylvania beginning in April 1990. An initial Phase I site assessment was performed for subject site, followed by a Phase I assessment for additional property area, a Phase II investigation for the Copper Powder area, and an evaluation of the wastewater treatment system.

The initial report was for a 13-acre tract of land and is the first section of this final report. The initial report covered the major portion of the facility.

A second report covers additional property (less than one acre) which will provide access to the initial property from 14th Street. This second report is the second section of this final report.

The third section of this final report is a third report covering the follow-up Phase II assessment of the Copper Powder Building.

A fourth report involves the review and assessment of the wastewater treatment plant and is included as the fourth section of this final report.

The following presents a summary of recommendations and remediation costs identified in the four projects:

1. Soil contamination around the Copper Powder Building has been identified and consists of an estimated 200 CY. It is recommended that the copper-contaminated soil be removed and disposed offsite. Estimated costs for removal and disposal range between $15,000 and $25,000, assuming disposal of waste in a sanitary landfill. Higher costs could result if disposal in a hazardous waste landfill is required.

2. A review of available design, operation, and effluent monitoring information indicates that the wastewater treatment plant will not meet effluent requirements if both the coating line and the galvanizing lines are operated simultaneously. It is recommended that minor revisions to the plant (e.g. flow equalization) and operation of the two production lines at different times be performed in order to reduce the potential for permit exceedances.

3. Pickling acid residue under the pickle line and in the loading dock area is considered to be a hazardous waste. It is recommended that this material be removed to prevent associated liability. Estimated offsite disposal costs range from $10,000 to $15,000.

4. The hazardous waste storage area does not meet the requirements of state and federal regulations. Upgrading of this area (curbing, sealing cracks) would require an estimated $20,000.

5. Soils adjacent to two transformers are contaminated with PCB. Estimated cleanup and remediation cost should be no more than $10,000.

6. Asbestos fibers are present in building and pipe insulation materials. Removal/remediation of deteriorated portions of these materials is recommended. Estimated cost is $350,000. It should be noted that additional precautions and costs will be associated with proposed demolition of the Copper Powder Building due to asbestos materials located therein.

7. Various administrative-type items should be addressed with regard to hazardous waste storage compliance and records, PPC plan update, SARA Title III reporting, PCB records, and SPCC plan development.

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I. EXECUTIVE SUMMARY

Killam Associates, DLA Division (Killam) performed a site investigation of the H.H. Robertson Company facility in Ambridge, Pennsylvania, beginning April 16, 1990. Potential liabilities have been identified as follows:

A. Contamination resulting from the copper powder building exists in the soil next to the building. In order to identify the extent of contamination and the contaminated soil characteristics, further study including a subsurface investigation is required. An estimate of $15,000 to $20,000 for this investigation includes drilling, sampling and analysis, and data analysis.

B. A history of violations of permit requirements is evident with regard to the wastewater treatment plant. In addition, new permit limits were recently issued and the galvanizing line has not been in operation under the new limits. Further study of wastewater treatment plant design and coating/galvanizing line operations is recommended to determine feasibility of meeting permit limits. Estimated costs for this study is $3,000 to $5,000.

C. Pickling acid residue under the pickle line and in the loading dock area is considered to be a hazardous waste due to the characteristic of corrosivity. It is recommended that this material be removed by current owner to avoid future liability. Estimated disposal costs could range from $10,000 to $15,000.

D. The hazardous waste storage area does not meet the requirements of state and federal regulations. Upgrading of this area (curbing, sealing cracks) would require an estimated $20,000.

E. Miscellaneous debris, rubble, abandoned equipment, and product containers are present throughout the site. Removal by current owner is recommended to limit liability for these items.

F. Soils adjacent to two transformers are contaminated with PCB. Estimated cleanup and remediation cost should be no more than $10,000.

G. Asbestos fibers are present in building and pipe insulation materials. Deterioration of these items may result in airborne fibers which may pose health and safety risks to employees or the public. Removal/remediation of the deteriorated asbestos materials is estimated at $350,000.

H. Three abandoned underground storage tanks exist on the site. Investigation to determine the presence of contamination resulting from those tanks is underway.

I. Various administrative-type items should be addressed. They include:

1. Compliance with 90-day hazardous waste storage rule.

2. Updating hazardous waste storage PPC plan.

3. Galvanizing line startup prior to July 31, 1990, or apply for air quality permit if operations resume after that date.

4. SARA Title III Tier I/Tier II report should be submitted.

5. Quarterly inspection reports and annual records should be developed for PCB equipment.

6. An SPCC plan for oil products should be developed. This could be included as part of the PPC plan in item 2 above.

II. INTRODUCTION

The H.H. Robertson Company, Ambridge facility, produces galvanized steel and aluminum sheet metal products for the metal fabrication and building industries. A continuous strip coating line is used to paint steel, galvanized steel, and aluminum. A hot-dip galvanizing line operated until July 1989, at which time it was idled.

A environmental site investigation was conducted by Killam Associates, DLA Division (Killam) commencing April 16, 1990 and ending in mid-May, 1990. Background information was obtained from the Department of Environmental Resources, US Army Corps of Engineers, Beaver County Historical Society, Beaver County Registrar of Deeds, and Soil Conservation Service. Personal interviews were conducted with Al Bracalielly, Rich Morgart, and Gus Hampe.

Potential liabilities associated with the property have been identified and include asbestos containing metal panels, roofing materials, asbestos containing pipe insulation, PCB contaminated soils, and copper contaminated soils.

It should be noted that information regarding the site was limited to that obtained from current H.H. Robertson personnel and readily available public records. Based on this information and onsite investigations, Killam has identified the most likely areas of significant environmental liability.

Killam believes that this investigation represents a reasonable level of diligence in its scope. Due to the changing of regulatory requirements and other factors beyond our control, we cannot guarantee or warranty any aspect of the work, including estimated remediation/compliance costs.

III. SITE LOCATION AND SURROUNDING LAND USE

The H.H. Robertson facility is located on 14th Street in Ambridge, Pennsylvania. See Figure 1 for site location. The parcel consists of approximately 33 acres bounded on the east by Oak Alley, the west by a railroad right-of-way, the north by proposed 19th Street, and the south by 14th Street.

The property covered by this report consists of a 13-acre parcel of land as shown on Figure 2. The facility buildings cover approximately 295,000 square feet. The western, eastern, and southern parcels of ground surrounding the facility buildings are predominantly paved with concrete and asphalt. The paved areas serve as parking lots, laydown areas, and roadways.

At present, the paved areas cover approximately 225,000 square feet. Other areas on the northern parcels of ground adjoining the facility buildings are unpaved and covered with soil or slag. These areas are used for storing discarded scrap metal siding, wooden pallets, waste concrete, and miscellaneous machinery parts. (see Figure 2 for site layout).

The H.H. Robertson facility is situated in an area of combined residential and commercial/industrial properties. Residential lots are located on adjoining properties to the east and west.

The buildings, paved and unpaved storage areas, parking lots, and acid waste lagoon area are owned by H.H. Robertson.

IV. GEOLOGY AND GROUNDWATER

The subject facility is located in the Appalachian Plateau physiographic province. This province is characterized by its moderately steep terrain which has been well dissected by stream erosion. Valleys are commonly steep and relatively narrow. The Appalachin Plateaus are formed on nearly flat lying, gently folded layers of sedimentary rock.

The site is deeply underlain and bordered to the west by consolidated rocks of the Conemaugh Formation which are of the Pennsylvanian System. The Conemaugh Formation occupies the interval from the base of the Pittsburgh coal to the top of the Upper Freeport coal at the base of the formation. The Conemaugh Group crops out over much of the subject area and has the greatest area of exposure of any geologic unit in the country.

The bedrock structure is characterized by a gentle regional dip averaging 17-feet per mile southeast toward the axis of the Pittsburgh-Huntington syndinorium, a major structural depression of Southwestern Pennsylvania.

The principle occurrence of groundwater within the Conemaugh Group is contained in two sandstones (Mahoning and Morgantown). Moderate yields under favorable conditions can be expected from these units. As the Mahoning sandstone is at the base of the Conemaugh, groundwater supplies in this part of the county are derived from the Morgantown sandstone (which is about 350 feet higher in the stratigraphic column) or the most abundant source of groundwater the valley fill deposits in the Ohio River Valley.

Valley deposits consists of a sand and gravel mixture which were deposited during the Wisconsin glacial-outwash period. These unconsolidated sediments become finer and more sandy toward the top. A silt layer of Recent age commonly overlies the sand and gravel of glacial origin. Artificial fill has been built up by man to accommodate industrial sites along the flood plain.

A maximum thickness of sand and gravel of 130 feet is indicated by well logs in the vicinity of the subject area. Figure 3 illustrates various information pertinent to subsurface/groundwater conditions beneath the subject property. Box 1 shows a top view of the Ambridge area with explanations of area structures and geology. Box 2 displays a cross sectional view (A-A') of the Ohio River Valley in the subject area. Box 3 illustrates the approximate location of the valley edge which is made up of Conemaugh Formation rocks. This box also illustrates approxiate groundwater flow direction which is based on topographic control, discharge toward the unnamed tributary of the Ohio River (north of the site) and the valley fill discharge into the Ohio River.

Of special note regarding Box 3 of Figure 3, the well field northwest of the subject property was abandoned in July of 1946 due to increased diffuculty with chemical quality (high manganese and low pH) and with decreasing yields. It is known that industrial wastes discharging into the small creek near these wells aided in their contamination. (Groundwater Resources of Beaver County, 1951, Van Tuyl and Klein).

In summary, the glacial outwash filled Ohio River Valley is the most abundant source of groundwater in the subject area. Encountered water elevation below the subject site is estimated at 685 feet AMSL (about 75 feet below ground surface).

V. SITE HISTORY

The H.H. Robertson facility has been located in Ambridge, PA, for 71 years. Previously, H.H. Robertson had a facility located in Beaver Falls, PA, until enlargement of that facility required relocation to its present 40-acre site in 1919.

The original facility was built to fabricate metal walls and roofs that could withstand corrosion in the harsh industrial environment of the East Coast. H.H. Robertson developed a process to coat steel sheets with an asphalt adhesive and asbestos felt which would protect them from corrosion and eventual deterioration. The material was called "asbestos protected metal" or APM. Additional improvements were made on the original process and the material which can be found throughout the H.H. Robertson facility today became known as "Galbestos".

The H.H. Robertson facility constructed and developed the Steel Galvanizing Line in the mid 1940's. It was primarily used to protect steel decking from the alkalinity/water content of the concrete poured over the material. The galvanizing line was renovated in 1978/1979 including the addition of a new zinc bath. The line was idled in July 1989.

The metal panel coat system developed in the late 1970's, known as "Versacar", was specifically intended to protect architectural metal buildings from "acid rain" and other contemporary pollutants. This particular product line is still in operation at the present time.

The polyurethane foam panel line was taken out of service in the late 1980's. The foam laminating process helps to insulate architectural metal veneer structures from the environment. Other

roll lines have been located in the large warehouse/ maintenance structure over the years. They include the GKX decking line, cellular module profile (CMP), and other foam and coating lines.

The original structures located within the proposed new property boundaries have changed very little within the last 40 years. Additional manufacturing/storage areas have been added to the east of the existing structures including the CMP, coil storage structure, and small add-on structures to the galvanizing line.

Aerial photographs dating back to the early 1950's were viewed at the Army Corps of Engineers and Soil Conservation Service. They provided good verification of past land usage and facility development, but no new evidence of major contamination areas.

The property was reportedly owned by Central Tube, which manufactured steel pipe at the location until the 1920's or 30's.

VI. OPERATION AND FACILITIES

The H.H. Robertson facility employs 100 people and is involved primarily in the treating and coating of galvanized coils for use in fabricated steel products. The Ambridge facility operated a galvanizing line in the late 1940's, which was taken out of service in 1989. The polyurethane foam panel line was in operation in the mid-1980's before it was shutdown and moved to another facility in 1988. Current facility layout and proposed boundaries are shown on Figure 2.

The coil coating line takes galvanized coils, treats and paints them for use in fabricated steel products. Galvanized steel coils are loaded by forklift onto a coil car. The coil car then transfers the coil to the uncoiler. The strip then passes through a series of equipment that enables the operator to add coils and better control the feeding rate. The devices include the pinch roll, entry crop shear, stitcher, bridle, accumulator, and press line roll.

The strip then passes through a series of cleansing baths and chemical pretreatment. Some of the materials involved include: acids, alkalis, hot and cold water rinses, Granddine #108, and Dioxylite 41. The strip then enters the coating application area which is followed by a baking oven. This enables the coating material to dry/cure quickly and creates a hard finish.

The end of the line includes an accumulator, bridle, exit crop shear, embosser, pass line roll, recoiler and coil car. This equipment is mainly used to put the strip back into a coil form for shipment.

The coating operation generates hazardous materials in the form of waste solvents. A portion of the solvent and paint fumes are used along with natural gas to heat the coating baking ovens. Residual fumes are incinerated in an afterburner. The balance of hazardous materials generated are in the form of spent coating materials resulting from the cleaning of coating rolls for color changes. The process involves passing cleaning solvents (MEK) over the rolls. The wash is collected in a small pan beneath the coating application nozzle and transferred to a 50-gallon collection vat. The waste material is then transferred to a 55-gallon drum. The solid and liquids are separated, labeled as hazardous wastes, and placed in an outside hazardous waste storage area. The stored wastes are removed within 90 days for offsite disposal.

The galvanizing line takes raw steel coils, cleans and treats the metals, then adds a coating of zinc to the surface for corrosion prevention. As in the case of the coating line, the strip first passes through a series of equipment that ensures a continuous and uniform feeding rate for the coil. The strip then passes through a three (3) stage cleaning section. Alkaline cleaners and water rinsing chemicals are used in this section.

The strip then proceeds to the pickling process tanks. These tanks bathe the strip in sulfuric acid and water to further clean the strip and roughen the surface to increase surface profile/area. The strip then enters a three (3) stage acid rinse to neutralize and remove the acid. Zinc ammonium chloride is added as a flux just before the strip enters the zinc kettle for plating.

At the end of the line, the strip is cooled and sprayed with tridite as it passes to the recoiler. The wastes generated in this process include detergents, alkalis, and acids. These materials are

contained and collected and sent on to the water treatment facility. The treatment process neutralizes the precipitates out of the metals. The mud/cake is then disposed of as a hazardous waste in an offsite licensed disposal area.

When the new zinc kettle was installed in the late 1970's, the former lead/zinc pot was backfilled in place and concrete applied over top. There were reportedly molten lead spills from the pot prior to its being abandoned. In an effort to identify any contamination resulting from the lead, Killam obtained subsurface samples in the area of the former zinc pot. The sampling location, No.4, is shown on Figure 4. Results of analysis presented in Table 2 indicate several metals are present in significant levels, but none are above the guideline for contaminated soils given in Section XII. Therefore, no major contamination from the abandoned lead/zinc pot is indicated.

The trough under the pickle tanks has been revised and additional curbing installed to contain the acid residue. Killam obtained subsurface samples along the pickle line to identify potential contamination resulting from leaks. The sampling location, No.5, is shown on Figure 4. Results of analysis presented in Tables 2 and 3 indicate metals are present in the soil but the soil is not a hazardous waste by TCLP toxicity metals analysis, and the total metals levels are below the guidelines for contaminated soil given in Section XII. Therefore, no major contamination is indicated in this area.

The polyurethane foam panel line produced a sandwich panel consisting of fabricated steel panels on the outside with a foamed core center. The wastes from this line consisted of polyols and isocyanates from purging lines, solvents used in cleaning and non-hazardous, non-toxic finished foam. This line was removed in

1988. Several equipment pits and utility troughs were abandoned when the line was terminated. These areas were subsequently filled with soil/concrete to accommodate the existing use as a coil storage area. Subsurface soil samples were obtained from the area of the former foam application area to identify potential contamination resulting from the foam line operation. The location of the foam line sample is shown on Figure 4 as sample No.6. Analysis results presented in Tables 3 and 4 indicate low levels of cyanide and ammonia, and no detectable organics. Therefore, no indication of major contamination in the area.

The wastewater treatment facility accepts wastes from the galvanizing and coating lines. The wastewaters are collected in sumps and transferred to the facility. The wastewater treatment facility provides treatment in the form of chromium reduction, neutralization, precipitation, flocculation, sedimentation, and vacuum filtration. Facility components include a sludge thickener, chemical feed for addition of lime, sodium metabisulfite and polyelectrolytes, a neutralization tank, and a tube settling clarifier.

The treated water effluent is designated as internal Outfall 107. The effluent passes through Manhole #7 where it becomes part of NPDES permitted Outfall 007 before discharge to a tributary of the Ohio River.

The former CMP Department building housed metal forming equipment used for shaping coated coils into final products. The equipment has since been removed, with foundations and various floor pits/ troughs remaining. Portions of the building are currently being used for warehousing and shipping. The eastern half of the building has low bay areas while the western half has high bays. Various miscellaneous equipment, debris, and product containers remain in the building.

The majority of the pits and troughs have a residual coating of oil. One trough (just east of the specialty department) has an estimated 250 gallons of oil and water. A sample of the trough fluid was obtained for lab analysis. The location of the sample, TR-1, is shown on Figure 4. Lab analysis results show less than 0.1 percent total organic halogens (TOX) which indicates that there is no large amounts of synthetic chemical contamination (e.g. solvents, PCBs, etc.).

Along the proposed southern boundary, a copper powder building was operated until the early 1970's. A brown mud was brought in on rail cars, dried into powder form, and packaged for shipment. Although this building is not within the original proposed property boundary, Killam obtained samples of soils adjacent to the building to identify if the copper powder process may have resulted in contamination within the proposed property boundaries. The sample location, CP-1, is shown on Figure 4. Analysis results presented in Table 1 show elevated levels of several metals. Arsenic and copper levels are above the guidelines for contaminated soils given in Section XII. The origin of the arsenic contamination is not known.

VII. RECORDS SEARCH

Killam visited the PA Department of Environmental Resources district offices on April 18, 1990. Under a Freedom of Information Act request, solid waste, hazardous waste, air and water files pertaining to the H.H. Robertson plant were reviewed at the Pittsburgh office.

Solid Waste/Hazardous Waste

Four "Hazardous Waste Inspection Reports were reviewed. The report dated February 2, 1987 and NOV dated February 18, 1987 identified the following noncompliance items:

A. Wastes accumulated onsite for a period longer than 90 days (Section 75.262(g)(2).

B. Unmarked containers, inadequate aisle space in accumulation area, and positioning of drums so that their hazardous waste labels were not visable (Section 75.265(g)(14)(iii).

C. Generating hazardous waste without a Contingency Plan (PPC) approved by the DER (Section 75.226(m), (Section 75.265(c)(1-21), (Section 75.265(f).

D. No required signatures for Manifest Nos. PAB2022064 (7/23/86), PAB2022075 (7/27/86), and PAB2022086 (8/29/86) (Section 75.262(e)(7)(XV)(j(1)(j(2).

E. No weekly inspection reports for leaks and for deterioration caused by other factors (Section 75.265(q)(5).

F. No permit for operating an onsite hazardous storage, treatment, or disposal facility (Section 75.265(z)(17) and Act 97, Section 401(a) and 610(9).

A subsequent inspection performed on 11/12/87 and resulting NOV dated 12/11/87 identified that H.H. Robertson was still violating items A, B, and F. The report also identified three other items of note:

1. NPDES Permit No. PA 0003000 discharge violations of the following parameters: pH, total suspended solids, zinc, oil & grease, and hexavalent chrome.

2. Baghouse dust and wastewater treatment plant sludge had not been evaluated by the generator for hazardous waste constituents.

3. Pickle tank leakage and waste accumulation within the containment area.

In 1988, the DER performed two more inspections; one on August 4, 1988 and another December 8, 1988. Once again, the generator violated items A and B. Subsequent NOVs were issued for these violations.

H.H. Robertson has been assessed monetary penalties three times in recent years by the Bureau of Waste Management for violations described in Section 605 of the SWMA, supra, 35 PS 6018.605. In May of 1987, a $2,500 fine was levied for inspection violations found on February 2, 1987, and in May of 1988 the plant paid a $1,000 fine for inspection violations dated 11/12/87.

A "Consent Assessment of Civil Penalty" of May 8, 1989 shows that H.H. Robertson paid a fine of $4,500 for violations noted in an inspection performed on December 8, 1988.

The DER also had a report prepared by "Waste Materials Management and Consulting Inc." describing the eruption of a sealed 55-gallon

drum of Mobay Chemical product, Mondur 556, while in transport to a disposal area. The spill was contained, cleaned up, and corrective action by the generator was undertaken. This incident involved waste materials received from H.H. Robertson during an April 1988 shipment. This incident occurred off of H.H. Robertson property, in Scottdale, PA.

We were also able to view a copy of the Preparedness, Prevention and Contingency Plan (PPC) prepared for H.H. Robertson. This document was approved by the DER on November 2, 1987.

Other items reviewed by Killam include the following:

A. Hazardous Waste Permit Application - 6/9/81
B. Hazardous Waste Report - 7/30/81

Air Quality

Air quality records were predominantly from the 1960's, 1970's, and early 1980's and covered mostly asbestos and asphalt related production processes. Items of note relating to current operations include the following:

A. The baghouse was installed as part of a consent order in 1980 to prevent particulate emissions from the galvanizing line.

B. Odor complaints were noted in reports in late 1987. The odors were from malfunctions of the coil paint line which were subsequently remedied.

C. DER inspection reports from 2/87, 3/88, and 5/89 indicate galvanizing and paint lines operating with satisfactory air emissions. Foam line was also noted as operating in the 1987 and 1988 reports.

D. Existing air operating permit covers the paint line afterburner. Permit expires 11/30/91.

NPDES Records

In addition to the NPDES application and permit for H.H. Robertson's water discharges, two NPDES inspection reports and two NOVs were reviewed.

The inspection reports were dated November 12, 1987 and June 6, 1989. Both reports noted that they were due to numerous or chronic discharge monitoring report DMR violations. Both reports also noted that the wastewater plant should be better maintained (e.g. cleanup, spills, residue) and records should be updated and maintained.

The NOV letters were issued on March 14, 1988 and March 7, 1989. Both NOVs cited violations of total suspended solids, zinc, hexavalent chromium, and pH. Each letter also states that continuing incidents of noncompliance may be cause for DER action. See Section VIII for review of current DMRs and plant operation.

VIII. WATER AND WASTEWATER

Water for process and sanitary usage is obtained from Ambridge Water Authority. Process water usage as identified on the 1989 NPDES Application includes surface preparation/cleaning of coils, hot dip galvanizing process, and surface finishing. Other permitted discharges which do not require monitoring include storm water runoff and noncontact cooling water. Sanitary wastewater discharges are to the Ambridge Water Authority sewer system.

Wastewater from the process water streams is treated in the wastewater plant. Treatment includes oil/water separation, chromium reduction, neutralization, precipitation, flocculation, and sedimentation. The treated effluent is discharged through NPDES internal Outfall 107 to Outfall 007, which flows to a tributary of the Ohio River. Solids are removed from the plant in the form of filter cake from the vacuum filtration unit.

The plant has an NPDES permit which is in effect until September 1994. The wastewater treatment plant effluent is covered by two separate sets of monitoring requirements, one for coating line operation only and one for operation of both the coating and galvanizing lines. It should be noted that the galvanizing line has not been operated under the terms of the new permit which was issued in September 1989. In addition to changing monitoring requirements from concentration (parts per million) to loading (pounds per day), the new permit requires the additional parameters of iron, copper, and cyanide. Another requirement of the permit is that DER be notified at least 30 days prior to startup of the galvanizing line.

The operating schedule for the plant has reportedly been to run the galvanizing line midnight shift and the coating line the other two shifts. Based on a review of NPDES discharge monitoring reports (DMR) for the period from January 1988 and February 1990, it

appears that zinc and suspended solids have been a continuing problem. Zinc levels have exceeded permit limits eight months out of the 19 months that the galvanizing line was operating, while suspended solids exceeded limits four of the 19 months. The only exceedance of limits after the galvanizing line was idled in July 1989 was for chromium.

Two DER inspections were noted as being due to chronic DMR violations. The inspections were conducted on November 12, 1987 and June 6, 1989. Notices of violation (NOV) due to permit exceedances were issued in March of 1988 and March of 1989. The NOV note that continuing noncompliance could result in DER action.

Based on the new permit monitoring requirements and the possibility of operating the galvanizing line simultaneously with the coating line, it is recommended that a detailed evaluation be performed to identify whether the plant design is sufficient to meet new operating permit requirements and proposed production schedules.

Pickling acid from the galvanizing line is currently collected in a tank, with the acid being used as part of the wastewater treatment process for chromium reduction. Previously, acid was collected in a subfloor concrete tank from where it was pumped to the steel waste acid tank north of the former foam line building for offsite disposal. In order to investigate any residual contamination resulting from this abandoned concrete tank, Killam obtained a subsurface sample at location No.7 as shown on Figure 4. Analysis results presented in Tables 2 and 3 show no metals concentrations in the soil above guidelines for contaminated soil given in Section XII. TCLP leachate analysis for metals also showed metals below regulatory limits. Therefore there is no major contamination indicated in this area due to the former acid tank.

IX. SOLID WASTE PRACTICES

Plant trash is collected and placed in dumpsters which are picked up by the local trash hauler, Reed Powell.

Waste oils and solvents are collected along with paint wastes in 55-gallon drums and managed as hazardous wastes. The full drums are stored outside at an area west of the coating/galvanizing building prior to transportation offsite for recycling/disposal. The estimated 50 to 60 drums per quarter are handled by Waste Materials Management & Consulting, Inc. (WMMC), who arranges for waste characterization, manifesting, transportation, and disposal of the wastes. The H.H. Robertson facility does not have a treatment, storage, or disposal (TSD) permit, and is therefore not permitted to store the wastes onsite for more than 90 days. A check of labels indicates current compliance with the 90 day storage rule on the dates of the Killam site investigation.

The existing hazardous waste storage area is outside on a concreted area which appears to be in violation of the PA hazardous waste accumulation regulations. Specifically, 25 PA Code 75.262(g) requires that containers be managed in accordance with 75.265(q), which requires that container storage areas have "a containment system capable of collecting and holding spills, leaks, and precipitation..." No such system exists at the H.H. Robertson facility.

Soil samples of exposed earth areas adjacent to the hazardous waste storage were obtained for lab analysis. Sample locations are shown as D-1, E-1, and E-2 on Figure 4. Analysis results shown in Tables 1 and 3 indicate no major spills reaching the soil based on characteristics of corrosivity, ignitability, reactivity, and TCLP

toxicity for metals analysis. TCLP organics analysis indicate low levels of three organic compounds, including acetone. See Table 4 for results. However the low levels are not indicative of major contamination, so it appears that no major contamination is present in this area.

Filter cake is a product of the wastewater treatment plant operation. The filter cake is a hazardous waste based on EP toxicity leachate analysis for chromium. The filter cake is collected in a roll-off box and transported offsite (to Mill Service) for treatment/disposal. The material is identified as hazardous waste No. K062 on manifests. Small amounts of spillage in the area of the hopper and roll-off box were noted during the site inspection. Routine cleanup of the area is recommended to prevent potential contamination of soils. A sample of the filter cake, G-1, was obtained for lab analysis. Analysis results (see Table 1) confirm that the material is a hazardous waste due to TCLP toxicity for chromium (at 67 mg/l). TCLP toxicity limit is 5.0 mg/l.

During the operation of the galvanizing line, a baghouse collects fumes/particulates from the line. The baghouse dust has been collected in 55-gallon drums in the rail loading area just south of the treatment plant. One lab analysis report for a 9/6/88 sample shows EP toxicity lead at 6.79 mg/l, above the 5.0 mg/l EP toxicity limit. This analysis result indicates that the baghouse dust is a hazardous waste. However, other samples including a sample tested by DLA/Lab (TCLP) indicate this material is not a hazardous waste due to TCLP metals (see Table 1, Sample F-1) or corrosivity. It is recommended that these existing wastes be removed by H.H. Robertson to limit liability in this matter. In addition, periodic sampling and analysis should be performed to monitor waste characteristics for hazardous waste parameters.

Waste sulfuric acid from the galvanizing line is used onsite as part of the wastewater treatment plant process. The acid is used in the chromium reduction portion of the treatment process. Previous to this usage, spent sulfuric acid had been shipped offsite for treatment/disposal as a hazardous waste (K062) as indicated by hazardous waste manifests. Under its current use as part of the treatment process, the acid is believed to be exempt from RCRA regulations under 40 CFR 261.2(e)(iii), which appears to exclude this recycled material.

The galvanizing line reportedly began operating in the late 1940's. Drawings for a waste acid tank are dated 1951. Acid disposal practices during the period before 1951 are not known but may have been onsite in the area north of the buildings and railroad right-of-way referred to on drawings as the Acid Lagoon. See Figure 4 for location. The waste acid tank was erected in the Acid Lagoon area and remains there at present.

It should be noted that residual onsite materials are present which could involve considerable liability if they remain inplace. These include 18 bags/drums of baghouse dust, approximately 60 cubic yards of pickling residue in the floor trough and in the rail loading area south of the treatment plant, an estimated 25,000 gallons of acid in the pickle tanks, and debris, rubble, unlabeled product storage containers, and abandoned equipment throughout the plant. Of special note is the pickling residue for which a sample was obtained for lab analysis. Analysis results in Tables 1 and 3 for samples C-1 and C-2 indicate that this material is a hazardous waste by the characteristic of corrosivity. See Figure 4 for sample locations.

It is recommended that the current owner remove these residual wastes and materials prior to the property transaction to limit liability associated with those items.

H.H. Robertson has an EPA identification number as a hazardous waste generator. The wastes include filter cake from the treatment plant and waste paints and solvents. The wastes are identified on manifests by the following hazardous waste numbers: D001, D007, D008, D009, F001, F002, F003, F005, F006, F012, and K062. All wastes appear to be properly labeled, and existing wastes in storage remained onsite less than 90 days at the time of Killam's site inspection. However, various violations of hazardous waste rules for storage are noted in Section VII of this report.

X. AIR EMISSIONS

The processes at the H.H. Robertson facility which discharge air emissions include the coating line and the galvanizing line. At the coating line, fumes are collected from the paint application area and from the bake ovens. Some of the fumes are used as a fuel in firing the ovens. All residual fumes are directed to the afterburner. The exhaust from the afterburner is regulated by an existing Air Quality Operating Permit and 25 PA Code 127. The permit is effective through November 30, 1991.

Fumes and particulate matter from the zinc bath and the acid pickle tanks at the galvanizing line are collected and passed through the baghouse located in the rail loading area south of the galvanizing line. The exhaust from the baghouse is not required to have an Air Quality Permit since the galvanizing line was an existing source when air quality regulations and permitting were adopted in the 1970's. DER does inspect the source based on the PA Air Regulations in 25 PA Code 127.

Based on records search at DER, it appears that the two sources are operating in general compliance with the regulations with a few exceptions resulting from equipment problems. See Section VII for details.

According to 25 PA Code 127.11, a permit is required if an existing source is reactivated after the source has been out of operation for a period of one year or more. The galvanizing line and baghouse were reportedly idled effective July 31, 1989. If operations resume before July 31, 1990, a permit application should not be required.

XI. RIGHT-TO-KNOW/SARA TITLE III

Community Right-to-Know and SARA Title III rules are contained in federal regulations 40 CFR 311 to 313. PA Right-to-Know regulations are contained in 35 PA Statutes 7301 to 7320.

H.H. Robertson has a written Hazard Communication Manual which is a guide to establisning training and compliance programs. No formal hazards training program exists. Material safety data sheets (MSDS) are maintained in the personnel office with copies also located in the plant. Employees were reportedly trained in a meeting several years ago. No annual training or records of initial training were available. H.H. Robertson has reportedly submitted MSDS to the fire department and the Beaver County Emergency Planning agency, as required by 40 CFR 370.21. A review of current operations is advised to ensure the submittal includes current chemicals.

Reporting under 40 CFR 311 through 313 was investigated. A Form R was submitted for the 1988 calendar year. The due date for the 1989 report, if required, is July 1, 1990. There were reportedly no Tier I or Tier II reports submitted to date. Due to the use of sulfuric acid which is on the extremely hazardous substances list and solvents (paints and cleaning fluids), it appears that these annual reports should have been submitted. The Tier I and Tier II reports are required to be submitted by March 1st for the previous calendar year. Civil and administrative penalties up to $25,000 per violation can be assessed for failure to report.

XII. SURFACE AND SUBSURFACE SAMPLING PROGRAM

Killam obtained samples of materials and surface soils to identify the presence or absence of contaminants of concern. Grab samples taken at the H.H. Robertson facility include the following:

Identification No.	Location	Analysis Parameters
A-1	Galvanizing Line 6" pipe insulation	Asbestos
A-2	Coating Line insulation covering on motor part	Asbestos
A-3	Warehouse/Maintenance Bldg., North Side at Dock #11	Asbestos
A-4	Warehouse/Maintenance Bldg., East & South Side	Asbestos
C-1	Pickling Tank (waste material beneath)	TCLP (metals) corrosivity, reactivity, CR^{+6}
C-2	RR Loading Dock (waste material on top of RR siding)	TCLP (metals) corrosivity, reactivity, CR^{+6}
D-1	Same Location as E-1	TCLP (metals), CR^{+6} TCLP (volatiles/semi-volatiles)
E-1	Southeast corner of concrete slab - Drum Storage Area	TOX, Corrosivity, reactivity, ignitability
E-2	Covered Drum Storage Area, Northeast corner of bldg.	TOX, Corrosivity, reactivity, ignitability
F-1	RR Loading Dock (Baghouse Dust)	TCLP (metals), $+CR^{+6}$, Corrosivity
G-1	Waste Treatment Facility (Filter Cake)	TCLP (metals), $+CR^{+6}$

Identification No.	Location	Analysis Parameters
T-1	Transformers South of Warehouse/Maintenance Bldg.	PCB's
T-2	Transformers North of Warehouse/Maintenance Bldg.	PCB's
T-3	Transformers North of Urethane Line	PCB's
TR-1	Warehouse/Maintenance Bldg., Machinery Trench #1	TOX (total organic halogens)
CP-1	Copper Processing Bldg. near RR Siding	(Total Metals) Ag, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn
A-5	North Storage Area Bldg.	Asbestos
A-6	Coating Line Motor Insulation	Asbestos
A-7	Galvanizing Line 18" Ø pipe Insulation (South Wall)	Asbestos
A-8	Galvanizing Line 6" Ø pipe Insulation (South Wall)	Asbestos
A-9	Coating Line 6" Ø pipe Insulation	Asbestos
A-10	Bldg. Siding South Wall of Galvanizing Line	Asbestos
A-11	Bldg. Siding East Wall of Galvanizing Line	Asbestos
A-12	Warehouse/Maintenance Structure 6" Ø pipe insulation	Asbestos

Killam obtained soil samples to identify subsurface contamination associated with specific operations. Split spoon sampling utilizing a drill rig was performed at the H.H. Robertson facility as follows:

Identification No.	Location	Analysis Parameters	Sample Depth (Ft.)
No.1	Asphalt Tank	TCLP & TCLV Semi Volatiles TOX & ignitability	5 - 10
No.2	Acid Storage Tanks	(Total Metals) Corrosivity Ag, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn, TCLP (metals)	3 - 6
No.4	Galvanizing Kettle	(Total Metals) Ag, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn	14 - 18
No.5	Pickle Line	TCLP (metal), CR^{+6}, (Total Metals) Ag, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn, Corrosivity, Reactivity	2 - 5
No.6	Urethane Line	TCLP TCLV Semi Volatiles Cn, NH_3	8 - 12
No.7	Treatment Plant/ Acid Waste Tank	TCLP (metals) Corrosivity Ag, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Zn	7 - 10
No.A	Warehouse/Maintenance Bldg. No. 2 Fuel Tank/Opposite Superintendent Office	PHC/BTEX	2-4, 7-9, 12-14
No.B	Warehouse/Maintenance Bldg. No. 2 Fuel Tank/Outside Loading Platform West End	PHC/BTEX	2-4, 7-9, 12-14, 17-19

All samples were collected, preserved, and analyzed in accordance with EPA approved methods. (See Figure 4 for sampling locations and Tables 1 through 7 for lab analysis results)

Sampling locations chosen by Killam were based on good engineering judgment and available site information. The intent of the sampling was to identify the presence or absence of contaminants most likely to be associated with the specific processes.

Criteria used in identifying contaminated soils includes the following:

No regulations presently exist at any level applicable to this site regarding the degree of contamination which may be present in soils, before they are considered unacceptable. Several states (most notably, New Jersey and California) have established these criteria, as have foreign countries (such as Canada and the Netherlands). Under RCRA, any listed hazardous waste mixed with soil makes the soil a hazardous waste. Under PA Act 97, any residual waste must be disposed of at a permitted site. By extension of this logic, the impractical conclusion that no soil contamination is permissable can be reached. However, this is widely recognized as unworkable. Thus, this report uses a composite set of criteria (as listed in Table 5) which is derived from the New Jersey, California, Canada, and Netherlands guidelines for industrial facilities to evaluate whether a soil may be left in place or requires removal and disposal.

These criteria are all based on human exposure and toxicity information and are all similar in nature. These criteria are proposed for use as rough guidelines only. If for a given parameter the soil concentration is close to the guideline, it may still be acceptable. If it is far above the guideline, it is clearly not acceptable.

XIII. PCB

There are 13 large transformers on the 15-acre property. In addition there are several small (less than 5-cubic foot) transformers at several locations. The large transformers were sampled and tested for polychlorinated biphenyls (PCB) content by Transformer Consultants. Some of the PCB-contaminated transformers were retrofilled to reduce PCB content to less than 50 ppm. Five PCB transformers are currently onsite. However, several of the small transformers were not tested and must be considered PCB-contaminated according to 40 CFR 761.3.

During the Killam site investigation, two transformers, two oil circuit breakers, and an oil-filled controller were being stored for disposal. One transformer had a PCB label, while the other four items were not labeled. These items were on pallets on an open floor area which does not comply with 40 CFR 261.65 storage facility requirements (i.e. curbing, containment, marking, etc.). If these items are stored for more than 30 days, they would be in violation of 40 CFR 761.65.

According to H.H. Robertson personnel, no records are maintained as required by 40 CFR 261, Subpart J for PCB items in use, storage, or to be disposed. This includes annual reports and quarterly inspections.

Three transformers located outdoors had areas of oil stained soil. Samples of the soil were obtained to determine PCB content (see Section XII and Figure 4 for sample location). Analysis results showed PCB levels at 6.8, 76.5, and 210 parts per million (ppm) respectively for samples T-1, T-2, and T-3. Based on analysis

results and guidelines in Section XII for contaminated soils, contamination is indicated at two of the sampled locations, T-2 and T-3. It is estimated that less than one cubic yard of material will require excavation and disposal to remediate these areas.

New PCB requirements are included in revised regulations published on December 21, 1989 in the Federal Register. A Notification of PCB Activity form should be filed and additional recordkeeping requirements should be implemented to meet the new requirements.

XIV. ASBESTOS

Killam retained BCM Engineer's Inc. (BCM) of Pittsburgh, PA, to survey and sample the H.H. Robertson facility in Ambridge, PA, for the presence of asbestos-containing materials (ACM). The survey and sampling program were performed on May 2 & 3, 1990. The complete BCM report is included as Appendix A.

The objective of the study made by Killam and BCM was to identify potential and existing facility conditions that could impact public health.

The initial steps taken to identify ACM included taking bulk samples from accessible items of concern and a walk-through inspection of the buildings and ambient air sampling. Additional bulk samples were taken by Killam to clarify items of concern identified during our site reconnaissance.

The results of the bulk samples taken at the H.H. Robertson facility are identified in Table 6. ACM include the exterior siding and roofing material on the facility building and some of the pipe insulation within the buildings.

All results of ambient air sampling conducted are below the Environmental Protection Agency (EPA) recommended clearance level of .01 fibers per cubic centimeter of air and the Occupational Safety & Health Administration (OSHA) action level of .2 fibers per cubic centimeter for airborne fiber concentrations (see Appendix A for results).

There are four types of action which may be considered when ACM are identified in a facility:

A. Defer action: Implement a special "Operations and Maintenance Program (O&M). The program trains maintenance personnel in the recognition of ACM, cleaning and maintenance techniques, and re-inspection of ACM for signs of deterioration.

B. Encasement/Enclosure: Construction barriers between the ACM and the personnel utilizing the building area in question.

C. Encapsulation: Application of penetrating or seal coating to the ACM in an attempt to seal in all base fibers.

D. Removal: Controlled removal of all ACM from the building substrate(s) and subsequent sealing of the substrate.

It is the recommendation of Killam and BCM that the existing ACM remain in place and that an asbestos O&M be implemented. The estimated costs for implementing this plan are as follows:

O&M Program	$12,000
Small scale repair replacement and renovation of the deteriorating ACM	340,000
	$352,000

BCM has also estimated the cost for removal/replacement of all ACM at $1,640,000. This would entail the complete demolition of the plant and would be considered at facility closure.

XV. STORAGE TANKS

H.H. Robertson has several aboveground and underground storage tanks on the property. Aboveground tanks include fuel and acid storage tanks outside the north wall of the former CMP department, a flux storage tank and pickle acid tanks on the galvanizing line, two paint tanks on the coating line, and various chemical holding and treatment tanks at the wastewater treatment plant.

The only underground storage tanks known to exist on the 15-acre property are in the former CMP department building, two 500-gallon tanks near the maintenance office, and one 2000-gallon tank near the specialty department. The 2000-gallon tank was installed in 1947, but the installation date of the 500-gallon tanks is unknown. All three tanks are assumed to be filled with sand and are now under concrete floors.

Subsurface sampling was performed in the area of the tanks on the property and also near the asphalt tank adjacent to the property to determine if major spills or leaks from the tanks have resulted in ground contamination. Sample locations are shown on Figure 4 as No.1 for the underground asphalt tank, No.2 for the aboveground acid storage tanks, and No.A, No.B for the three underground fuel oil tanks.

Analysis results are presented in Tables 2, 3, 4 and 7. For the asphalt tank, results for TCLP leachate metals analysis and for ignitability indicate that the soil is not contaminated to the extent it is considered a hazardous waste. TCLP organics have no detectable quantities present. Therefore, there are no indications of major chemical contamination on the new property from the asphalt tank.

The analysis for the acid storage tank soil sample indicates no analyzed parameters above the applicable TCLP toxicity or Section XII guidelines. Therefore, no major contamination is indicated.

Results for the three underground fuel tank samples are presented in Table 7. Based on these results which show low levels of petroleum hydrocarbons, no major contamination is present.

H.H. Robertson submitted the underground storage tanks notification required by the EPA in May 1986. Eight tanks were included in the notification, none of which are on the 15-acre property covered by this report. The asphalt tank adjacent to the southeast corner of the proposed property boundary was not included in the notification.

A Spill Prevention Control and Countermeasure (SPCC) plan is required by 40 CFR 112 if a facility has greater than 42,000 gallons underground storage capacity of oil, or greater than 1320 gallons aboveground storage capacity of oil. Based on the UST notification and observed aboveground storage tanks and drums, it appears that the plant is required to prepare this plan.

There are no known septic tanks on the site.

XVI. CONCERNS AND RECOMMENDATIONS

In the order they appear in the foregoing report, the following items of concern and recommendations for addressing those items are as follows:

A. Copper Powder Processing

High levels of total copper and arsenic were found in a composite grab sample of surface soils taken just northeast of the copper powder building. Copper is a contaminant identified under the National Secondary Drinking Water Regulations in 40 CFR 143. Analysis for total copper and leachable copper is required for disposal of solid wastes in Pennsylvania. Leachable arsenic above 5 ppm would cause the material to be considered a hazardous waste. In order to identify the extent of contamination and characterize the material, it is recommended that a subsurface investigation be conducted involving soil sampling and groundwater sampling. Recommendations for remediation would be based on results of that investigation. Estimated cost for the investigation is $15,000 to $20,000.

B. Water and Wastewater

A history of violations of permitted effluent requirements is evident, especially when both the galvanizing line and the coating line are operating. In addition, the galvanizing line has never operated under the new permit limits. Therefore, it is recommended that a study be initiated to review the existing wastewater plant design and determine if proposed coating and galvanizing operating schedules/practices will result in permit limit exceedances. Estimated cost for this study is $5,000.

C. Solid Waste Practices

The pickling acid residue under the pickle tanks and in the railroad loading dock area is a hazardous waste due to the characteristic of corrosivity. It is recommended that this material (estimated at 60 cubic yards) be removed by current property owner to avoid liability in this matter. Estimated cost for disposal is $10,000 to $15,000. Removal costs are not included in this estimate.

The hazardous waste storage area does not meet the containment requirements of 25 PA Code 75.262. It is recommended that an area be upgraded to meet the requirements of state regulations. This will include curbing and sealing of cracks etc., at a minimum. Estimated cost should not exceed $20,000 for this work.

Other administrative type items should also be addressed, including removal of hazardous wastes within 90 days and updating of PPC plan for the handling and storage of hazardous waste.

Miscellaneous debris, rubble, abandoned equipment, empty or partially full product containers, etc. are present onsite. It is recommended that these materials be removed by the current owner to avoid future liability with these items.

D. Air Emissions

The galvanizing line must operate prior to July 31, 1990 to avoid applying for an air quality permit. Since the source will have been idle for a year on July 31, 1990, a new permit will be required prior to startup if operations are resumed after that date.

E. Right-to-Know/SARA Title III

The concerns in this area deal mostly with lack of written programs and annual report submittal. The owner or operator must submit annual reports. If not submitted, both the owner and operator may face fines and penalties. It is recommended that annual reports (Tier I/Tier II) be submitted by the current owner for 1989 calendar year and that future submissions are properly made.

F. PCB

Five PCB transformers are located within the boundaries of the proposed new property. Soil contamination exists around two non-PCB transformers. It is recommended that the soil be removed and disposed offsite. An estimated one cubic yard of contaminated soil would be removed. Estimated costs for removal and disposal should be less than $10,000.

No annual records or records of quarterly inspections exist for PCB equipment onsite. It is recommended that these records be developed and maintained. Failure to keep these records could result in fines and penalties.

G. Asbestos

Asbestos has been identified as being present in building materials and pipe insulation. Deteriorating building siding (Galbestos) and pipe insulation can result in airborne asbestos fibers which could be harmful to employee (and possibly public) health and safety. Therefore, it is recommended that deteriorated portions of asbestos containing materials be removed/remediated in accordance with OSHA and EPA standards. An estimated $350,000 will be required to accomplish this work.

H. Storage Tanks

Federal law requires that an SPCC plan be developed for facilities which use oil products. A plan does not exist for this facility and it is recommended that an SPCC plan be developed for the site. The SPCC plan requirements can be included as part of the PPC plan in Item C above.

T A B L E 1

GRAB SAMPLE RESULTS
(Metals)

Parameters	G-1* (mg/l)	D-1* (mg/l)	F-1* (mg/l)	C-1* (mg/l)	C-2* (mg/l)	CP-1** (mg/kg)
AGT Silver, Total	.03	< .02	.05	.05	.03	1.1
BAT Barium, Total	2.0	1.1	1.9	1.3	1.2	200
CRT Chromium, Total	67.0	< .05	.06	3.7	4.5	35
CDT Cadmium, Total	.04	.05	.05	.84	.08	9.7
PBT Lead, Total	.2	.3	.7	.5	1.4	240
HG Mercury	< .0004	<.0004	< .0004	< .0004	.0024	.39
ASFT Arsenic, Total	.003	.045	1.8	2.3	.74	47
SEFT Selenium, Total	< .002	< .002	< .020	< .020	<.002	< .11
CRG Hexavalent Chromium	.76	< .01	< .01	.02	.02	
CUT Copper, Total						20,000
FET Iron, Total						35,000
MNT Manganese, Total						470
NIT Nickel, Total						73
ZNT Zinc, Total						1090

* Metals analysis on TCLP leachate of soil samples.
** Total metals analysis on soil sample itself.

TABLE 2

DRILLING SAMPLE RESULTS
(Metals)

Parameters	#1* 5'-10' (mg/l)	#2** 3'-6' (mg/kg)	#2* (mg/l)	#4** 14'-18' (mg/kg)	#5* 2'-5' (mg/kg)	#5** 2'-5' (mg/kg)	#7* 7'-10' (mg/kg)	#7** 7'-10' (mg/kg)
AGT Silver, Total	<.02	<.91	<.02	<.84	<.02	<.85	<.02	<.90
BAT Barium, Total	.8	34	1.2	57	.5	35	.7	25
CRT Chromium, Total	<.05	7.4	<.05	5.7	<.05	5.3	<.05	7.2
CDT Cadmium, Total	.02	.98	<.02	.95	.03	.89	.04	1.3
PBT Lead, Total	<.2	9.8	.2	9.5	<.2	13	.3	30
HG Mercury	<.0004	.25	<.0004	<.092	<.0004	<.088	<.0004	<.092
ASFT Arsenic, Total	<.002	5.7	<.002	8.2	.002	6.9	<.002	1.8
SEFT Selenium, Total	.007	<.091	.005	<.084	.008	<.085	.008	<.090
CRG Hexavalent Chromium					<.01		<.01	
CUT Copper, Total		7.8		7.1		7.0		32
FET Iron, Total		12,000		9,700		10,500		6,750
MNT Manganese, Total		490		450		310		72
NIT Nickel, Total		11		11		11		5.5
ZNT Zinc, Total		73.5		25.9		188		267

* Metals analysis on TCLP leachate of soil samples.
** Total metals analysis on soil sample itself.

T A B L E 3

SAMPLE RESULTS

Parameters	E-1 (mg/kg)	E-2 (mg/kg)	C-1 (mg/kg)	C-2 (mg/kg)	#1	#2	#5 (mg/kg)	#6	#7
(H2SR-H2S) Reactivity	29	2	2	7			35		
(HCNR-HCN) Reactivity	.06	.06	.02	.02			1		
TDXS Total Organic Halogens	22	<20			<20				
CDR Corrosivity by pH	neg	neg	pos	pos		neg	neg		neg
FPT Flashpoint	>200°F	>200°F	>200°F	>200°F	>200°F				
CNT Cyanide, Total								4.2	
NH_3 Ammonia								30	

neg = Negative

pos - Positive

TABLE 4

TCLP EXTRACT - VOLATILE/SEMI-VOLATILE ANALYSIS

Parameter	Units	Detection Limits	1	6	D-1
Volatile Organics					
Acetone	ug/l	100	---	---	94 *, **
Benzene	ug/l	5	ND	ND	ND
Carbon Tetrachloride	ug/l	5	ND	ND	ND
Chlorobenzene	ug/l	5	ND	ND	ND
Chloroform	ug/l	5	ND	ND	ND
1,2-Dichloroethane	ug/l	5	ND	ND	ND
1,1-Dichloroethene	ug/l	5	ND	ND	ND
Methyl Ethyl Ketone	ug/l	10	ND	ND	ND
Tetrachloroethene	ug/l	5	ND	ND	ND
Trichloroethene	ug/l	5	ND	ND	ND
Vinyl Chloride	ug/l	10	ND	ND	ND
Semi-Volatiles					
m-Cresol	ug/l	10	ND	ND	ND
o-Cresol	ug/l	10	ND	ND	ND
p-Cresol	ug/l	10	ND	ND	ND
1,4 Dichlorobenzene	ug/l	10	ND	ND	ND
2,4 Dinitrotoluene	ug/l	10	ND	ND	ND
Hexachlorobenzene	ug/l	10	ND	ND	ND
Hexachlorobutadiene	ug/l	10	ND	ND	ND
Hexachloroethane	ug/l	10	ND	ND	ND
Nitrobenzene	ug/l	10	ND	ND	ND
Pentachlorophenol	ug/l	50	ND	ND	ND
Pyridine	ug/l	2000	ND	ND	ND
2,4,5-Trichlorophenol	ug/l	50	ND	ND	ND
2,4,6-Trichlorophenol	ug/l	10	ND	ND	ND
Bis(2-Ethylhexyl) Phthalate	ug/l	12	ND	ND	32
Isophorone	ug/l	12	---	---	1.6 *

ND - Not Detected
ug/l - Micrograms per liter
* - Indicates an estimated value below detection limits
** - Indicates parameter found in lab blank as well as sample

TABLE 5

CONTAMINATION GUIDELINES

Parameter	Soils (Max-ppm)*			Proposed Soil Guideline	Groundwater (ppb)	
	A	B	C	(ppm)	A-C	**
Aluminum***	-	-	-	-	-	-
Arsenic	20	30	50	30	10-100	50
Barium	200	400	2,000	1,000	50-20,000	1,000
Cadmium	1-3	5	8-20	10	1-20	10
Chromium	100	250	600-1,000	750	20-500	50
Copper	50-170	100	200-500	300	20-1,000	1,000
Lead	50-100	150-200	600-1,000	750	20-100	50
Mercury	0.5-100	2	10	10	-	-
Nickel	50-100	100	300-500	400	20-1,000	13
Selenium	1-5	3	10-20	10	1-50	10
Silver	-	-	50	50	20-200	50
Zinc	200-350	500	700-3,000	2,000	20-10,000	5,000
pH	6-8	-	2.5-12.5	-	-	6.5-8.5
PHC	100	1,000	0.5-2.0%	1,000	20-600	-
TOX	0.1	8	80	100	1-70	-
TOC***	-	-	-	-	-	-
PCB	0.05	-	10	10	0.01-1	-
Asbestos	-	-	1%	1%	-	300,000

NOTES: A - General background or uncontaminated
B - Marginal contamination
C - Contaminated

* Basis: Composite of NJ, Canada, UK, Netherlands standards.
** US EPA data
*** Guidelines for these parameters could not be set due to variables and lack of established standards.

TABLE 6

ASBESTOS ANALYSIS

	Asbestos						Nonasbestos					
	Chrysotile	Amosite	Crocidolite	Anthophyllite	Tremolite	Actinolite	Cellulose	Mineral Wool	Fibrous Glass	Synthetic Fibers	Other Fibers	Nonfibrous Material
A1	35	-	-	-	-	-	-	-	-	-	-	65
A2	-	-	-	-	-	-	3	20	<1	-	-	77
A3	25	-	-	-	-	-	65	-	-	-	-	10
A4	50	-	-	-	-	-	<1	-	-	-	-	50
A-5	<1	<1	-	-	-	-	35	-	5	-	-	60
A-6	2	-	-	-	-	-	<1	5	10	-	-	83
A-7	40	-	-	-	-	-	<1	-	-	-	-	60
A-8	-	-	-	-	-	-	20	-	-	25	-	55
A-9	-	-	-	-	-	-	40	-	5	-	-	55
A-10	55	-	-	-	-	-	<1	-	-	-	-	45
A-11	40	-	-	-	-	-	30	-	-	-	-	30
A-12	-	-	-	-	-	-	40	20	-	-	-	40

T A B L E 7

SOIL SAMPLE ANALYSES

Parameters	Units	A			B			
		2 Ft.	7 Ft.	12 Ft.	2 Ft.	7 Ft.	12 Ft.	17 Ft.
Petroleum Hydrocarbon (PHC)	mg/kg	< 40	< 36	< 36	42	131	< 35	< 36
Benzene	mg/Kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	mg/Kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylebenzene	mg/Kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Xylene	mg/Kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

mg/Kg - Milligram per Kilogram